

APPENDIX A: QUANTITATIVE REASONING SCORING RUBRIC

Student Name: _____

Date: _____

Course Title: _____

Reference #: _____

Students must be able to use the knowledge, skills, and attitudes of mathematics and the sciences for effective quantitative reasoning.

ASSESSMENT CRITERIA LEVELS

	N/A*	N/E**	Developing	Proficient	Accomplished
1. Results and conclusions: A. Reasonableness of results B. Checks results for correctness C. Justifies conclusions	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Results often unreasonable <input type="checkbox"/> Very seldom checks <input type="checkbox"/> Very little justification	<input type="checkbox"/> Results usually reasonable <input type="checkbox"/> Usually checks <input type="checkbox"/> Some justification but incomplete	<input type="checkbox"/> Results almost always reasonable <input type="checkbox"/> Almost always checks <input type="checkbox"/> Extensive justification
2. Uses the language and methods of mathematics in other contexts A. Correctly B. Independently	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Many errors <input type="checkbox"/> Requires much help	<input type="checkbox"/> Some errors <input type="checkbox"/> Requires some help	<input type="checkbox"/> Very few errors <input type="checkbox"/> Very seldom needs help
3. Uses the language and methods of the sciences in other contexts A. Correctly B. Independently	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Many errors <input type="checkbox"/> Requires much help	<input type="checkbox"/> Some errors <input type="checkbox"/> Requires some help	<input type="checkbox"/> Very few errors <input type="checkbox"/> Very seldom needs help
4. Uses scientific methods of analysis and experimentation A. Appropriately B. Accurately C. With insight and knowledge D. With complete documentation	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Applications often inappropriate <input type="checkbox"/> Many errors <input type="checkbox"/> Exhibits little knowledge or insight <input type="checkbox"/> Very little documentation	<input type="checkbox"/> Applications seldom inappropriate <input type="checkbox"/> Some errors <input type="checkbox"/> Exhibits considerable knowledge and insight <input type="checkbox"/> Some documentation but incomplete	<input type="checkbox"/> Applications never inappropriate <input type="checkbox"/> Very few errors <input type="checkbox"/> Exhibits full knowledge and insight <input type="checkbox"/> Complete documentation

* Not Applicable

** No Evidence

	N/A*	N/E**	Developing	Proficient	Accomplished
5. Use examples, counter-examples and mathematical proof A. With understanding and insight B. Correctly	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Exhibits almost no understanding or insight <input type="checkbox"/> Makes many errors	<input type="checkbox"/> Exhibits considerable understanding and insight <input type="checkbox"/> Makes some errors	<input type="checkbox"/> Exhibits complete understanding and insight <input type="checkbox"/> Makes very few errors
6. Uses conjecture and testing, mathematical modeling, computer simulation, and statistical techniques for realistic and relevant real world applications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Requires considerable guidance and explanation	<input type="checkbox"/> Requires some guidance and explanation	<input type="checkbox"/> Requires very little guidance and explanation
7. Uses various measurements, data gathering techniques, sampling, probability, and descriptive and inferential statistics to support or reject claims of size, relationship, or relative accuracy A. With understanding and insight B. Correctly	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Exhibits almost no understanding or insight <input type="checkbox"/> Makes many errors	<input type="checkbox"/> Exhibits considerable understanding and insight <input type="checkbox"/> Makes some errors	<input type="checkbox"/> Exhibits complete understanding and insight <input type="checkbox"/> Makes very few errors
8. Uses a variety of graphical, tabular, numerical, algebraic, verbal, schematic, and experimental techniques to represent, interpret, and draw inferences from data or function values A. Correctly B. Independently C. With understanding	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Many errors <input type="checkbox"/> Requires much help <input type="checkbox"/> Can represent but cannot interpret or draw inferences	<input type="checkbox"/> Some errors <input type="checkbox"/> Requires some help <input type="checkbox"/> Can represent and interpret but not draw inferences	<input type="checkbox"/> Very few errors <input type="checkbox"/> Very seldom needs help <input type="checkbox"/> Can represent, interpret, and draw inferences with much understanding
9. Creates generalizations from observed patterns and develops specific examples from general statements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Requires much assistance	<input type="checkbox"/> Requires some assistance	<input type="checkbox"/> Requires very little assistance
10. Engages in self-assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Synthesizes feedback with assistance	<input type="checkbox"/> Synthesizes feedback and integrates with self-analysis	<input type="checkbox"/> Utilizes self-assessment and feedback to modify performance

* Not Applicable

** No Evidence

(Contributed by Dr. Richard Riggs, Professor and Chairperson, Mathematics Department, New Jersey City University)